Appendix C:

Salmon-Friendly LEED Overlay

LEED™ 2.0	Salmon Impact Category	Life Cycle Phase	Recommended Salmon-Friendly Strategies	Regulatory Impact	Technical Requirements	Cost Impact
Sustainable Sites						
SS Prerequisite 1: Erosion & Sedimentation Control - Control erosion to reduce negative impacts on water & air quality	Water Quality	Use	Implement BMPs as established by "Stormwater Management Manual for Western Washington", August 2001, developed by Washington Department of Ecology	Seattle BMPs are equivalent and in some cases more stringent than the EPA referenced standard	to be determined	to be determined
SS Credit 1.0: Site Selection	Water Quality	Upstream / Use	Establish buffer zone from riparian areas, consistent with the Salmon-Safe® Farm Management Certification Program 2.0, or most current version, developed by the Pacific Rivers Council; on slopes of ≥10%, riparian zones should be no less than 50 feet and buffer zones should be vegetated with native plants; for established riparian zones, canopy cover should be >50% of mixed multi-aged, native species; for newly established plantings, design for maximum diversity.	See Seattle Urban Blue-print for Habitat Protection & Restoration, June 01	See Salmon-Safe® Farm Management Certification Program requirements	to be determined
SS Credit 2.0: Urban Redevelopment	Water Quality	Use	Assess existing total impervious area (tia) in the identified urban watershed; design new construction and retrofit existing construction so that tia does not exceed 10%	Determine how existing zoning regulations for allowing impervious cover requires change	Evaluate efficacy of strategies to reduce stormwater runoff including pervious paving materials, rainwater catchment, green roofs; review studies by Washington Aggregates & Concrete Association and University of Washington's Center for Urban Water Resources Management as related to local soils	varies depending on strategy
SS Credit 3.0: Brownfield Development	Water Quality	Upstream	Ensure that disturbance of contaminated site does not result in the uncontrolled release of hazardous materials, as with stormwater run-off, particularly in watersheds with salmon habitat	Review existing remedi-ation requirements for brownfield sites	to be determined	to be determined
SS Credit 4.4: Alternative Transportation	Water Quality	Use	Parking represents about 10% of land use in urban areas. Determine watershed scale total impervious area. For watersheds that exceed 10%, pursue parking strategies that result in no net increase achieved through elimination of surface parking, parking structures with installed rainwater collection or green roof, or pervious paving options.	Establish watershed-scale impervious area surveys with a not to exceed level of 10%; new buildings should pursue no-net increase strategies; existing buildings should be retrofitted	Evaluate efficicacy of pervious paving strategies & evaluate incentives	to be determined
SS Credit 5: Reduced Site Disturbance	Water Quality	Upstream / Use	Strengthen requirement in riparian buffer zone as consistent with the Pacific River's Council's Salmon-Safe Certification Guidelines currently under revision. On slopes of ≥10%, riparian zones should be no less than 50 feet and buffer zones should be vegetated with native plants	Consider zoning ordi-nance requiring minimum 50 feet riparian zone for slopes ≥10%.	to be determined	to be determined
SS Credit 6: Stormwater Management	Water Quality	Use	Existing codes provide equivalent perfor-mance.	Monitor implementation of existing codes to deter-mine effectiveness.	to be determined	to be determined
SS Credit 7: Landscape & Exterior Design to Reduce Heat Islands - Reduce heat islands to minimize impact on microclimate & human & wildlife habitat	Water Quality (temperature)	Use	Establish appropriate shading strategies to balance impervious cover, including from natural vegetation & from constructed shade systems; employ green roof & rainwater harvesting systems	Calculate total impervious cover by watershed; incentivize strategies to reduce heat islands	Evaluate effectiveness of off-the-shelf green roof systems; identify effective shading strategies (vege-tative & non-vegetative)	varies depending on strategy

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Water Efficiency						
WE Credit 1: Water Efficient Landscape - Limit or eliminate the use of potable water for landscape irrigation.	Water Quantity	Use	Specify native plants that minimize water requirements for irrigation; derive irrigation water from non-potable sources, e.g., collected rainwater, greywater		See City of Seattle Salmon-Friendly Gardening Guidelines	n/a
WE Credit 2: Innovative Wastewater Technologies	Water Quality; Water Quantity	Use	On-site wastewater treatment systems, water re-use, dual-flush toilets, waterless urinals, composting toilets	Determine whether any code restrictions on installing compost toilets, on-site wastewater treatment systems within City of Seattle limits		low to high
WE Credit 3: Water Use Reduction - Maximize water efficiency within buildings to reduce the burden on municipal supply and wastewater systems.	Water Quantity	Use	Dual-flush toilets, waterless urinals, composting toilets, infrared sensors; reuse rainwater & graywater for non-potable uses		See City of Seattle 1% for Conservation Program	low to moderate; City of Seattle provides a $120 rebate for waterless urinals
Energy and Atmosphere						
EA Prerequisite 1: Fundamental Building Systems Commissioning	Water Quality; Water Quantity	Use	Commissioning will ensure that mechanical systems (plumbing, electrical) are performing in a manner consistent with the Design Intent, and contributes to efficient water and energy performance.		Commissioning scope should be integrated into design process, beginning in pre-design.	Depends on size/complexity of project
EA Prerequisite 2: Minimum Energy Performance - Establish the minimum level of energy efficiency for the base building and systems.	Water Quality	Use	Use integrated design process to optimize energy efficiency	City of Seattle requires minimum 20% reduction for new construction, 10% reduction for existing building relative to ASHRAE 90.1-1999	Engage in whole building design incorporating passive solar, integrated systems, reduced plug loads.	
EA Prerequisite 3: CFC Reduction		Upstream / Use	Eliminate the use of CFCs as salmon are vulnerable to increased ultraviolet radiation exposure	Requirement in place	n/a	n/a
EA Credit 1: Optimize Energy Performance	Water Quality	Use	Meet and exceed Seattle's energy performance requirements	City of Seattle requires minimum 20% reduction for new construction, 10% reduction for existing building relative to ASHRAE 90.1-1999	Engage in whole building design incorporating passive solar, integrated systems, reduced plug loads.	Any higher first costs generally recouped in operational savings in 3-5 years
EA Credit 2: Renewable Energy	Water Quality; Water Quantity	Use	Identify non-hydro renewable sources such as wind, biomass and photovoltaics; pursue site design to optimize solar / wind access as appropriate	Determine availability of financial incentives from local utility, state or federal governments		
EA Credit 3.0: Additional Commissioning	Water Quality; Water Quantity	Use	Ensure that plumbing systems are included in scope in recommissioning manual	n/a		
EA Credit 4.0: Ozone Depletion		Use	Balance reduction of ozone depleting compounds with global warming potential, recognizing that both are contributing factors to salmon decline; specify non-ozone depleting refrigerants and fire suppressants as available and balanced with global warming potential		Monitor energy performance of ozone-friendly mechanical systems and specify as their global warming potential is equivalent to or less than systems using HCFCs and other ozone depleting compounds	high

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Energy and Atmosphere (continued)						
EA Credit 5.0: Measurement & Verification			Consider benefit of continuous monitoring relative to scale / complexity of building type and associated costs			low to high
EA Credit 6.0: Green Power			Establish contract with green-energy provider, such as is currently provided by Seattle City Light & other northwest energy suppliers; ensure that hydro sources are upgraded to accommodate specific salmon concerns	State of Washington requires energy suppliers to provide green energy option beginning 2002; evaluate upgrading of regional hydro sources		low price premium for most green energy options in the short term; likely savings in the long term
Materials & Resources						
MR Prerequisite 1: Storage & Collection of Recyclables	Water Quality; Water Quantity	Use	Using recycled content feedstock for manufacturing can lessen associated water impacts	Monitor water use and discharge andn other emissions associated with recycled-content manufacturing feedstocks		
MR Credit 2.0: Construction Waste Management:	Water Quality; Water Quantity	Upstream	Recovering construction & demolition debris and recycling it into new products can lessen the environmental burdens associated with manufacturing with virgin materials, particularly materials that are recycled in the region; ensure that local/regional recycling practices are not resulting in emissions greater than for virgin-based manufacture	Monitor water use and discharge andn other emissions associated with recycled-content manufacturing feedstocks		potential for cost savings
MR Credit 3.0: Resource Reuse	Water Quality; Water Quantity	Upstream	Reusing building materials can lessen the environmental burdens associated with manufacturing with virgin materials, especially those sourced/manufactured in close proximity to salmon habitat; the Resource Building Materials Exchange (RBME) is a source of used materials available to residents of King, Pierce, Thurston & Mason counties.	Evaluate whether there are regulatory constraints for using salvaged building materials; develop recommendations to facilitate safe reuse of building materials, particularly for structural applications	Ensure that reused materials are compliant with code requirements, parti-cularly for structural mater-ials and plumbing and electrical fixtures	potential for cost savings
MR Credit 4.0: Recycled Content	Water Quality; Water Quantity	Upstream	Specify materials with recycled content that adhere to manufacturing practices that are water efficient and have no or low emissions, particularly those that are persistent, bioaccumulative and toxic. Specify high volume fly ash cement concrete mixes to substitute for portland cement. Specify recycled-content and industrial by-product alternatives to virgin sand and aggregate for concrete mixes and other civil applications, such as pipe bedding material.		Adopt ASTM C1157 Standard Performance Specification for Hydraulic Cement (a performance-based specification designed for implementation of blended cement concrete mixes); evaluate use of Processed Glass Aggregate (PGA) as a substitute for virgin aggregate in paving and concrete mixes, pipe bedding materials; Evaluate use of Recycled Asphalt Pavement (RAP) in asphalt mixes.	
MR Credit 5.0: Local/ Regional Materials	Water Quality; Water Quantity	Upstream	Baseline Green™ provides information on the upstream impacts of the bill of materials; specify materials and products that do not result in the release of persistent bioaccumulative toxins through their life cycle and that adhere to best manufacturing practices for their industrial sector		Identify manufacturer-specific operations performance for all manufacturing facilities within watersheds where salmon habitat exist; for small quantity generators seek emissions data that are not reported for U.S. EPA Toxic Release Inventory	potential for cost savings using local/ regional manufacturers

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Materials & Resources (continued)						
MR Credit 7: Certified Wood	Water Quality; Water Quantity	Upstream	Forest Stewardship Council remains the only wood-certification protocol that maintains indpendent third-party verification, and is the only certification recognized by the U.S. Green Building Council LEED™. FSC's Pacific Coast (USA) Region has released draft 6.0, to apply to all forests in Washington, Oregon and California, reflecting heightened recognition of the unique ecological features therein.	Seattle City Council Resolution 30015, passed on9/7/99: "The Executive Services Director shall report back to the City Council with a status report and recommendations on strategies for implementing the intent of this resolution no later than December 31, 1999". This resolution was primarily directed at paper purchases and utility poles. No follow-up action has occurred as directed. A City resolution specific to building-related wood procurement is recommended.	Provide adequate lead-time in ordering to ensure FSC-certified product availability	none to higher
Indoor Environmental Quality						
IEQ Credit 4.2: Low Emitting Materials - Paints & Coatings to meet or exceed VOC & chemical component limits of Green Seal requirements	Water Quality	Upstream	Green Seal prohibits the use of toxic chemicals in their approved paints; many of the prohibited chemicals are persistent bioaccumulative toxins, therefore specifying GreenSeal compliant paints reduces the quantities of pbts released in the global environment			none
IEQ Credit 5.0: Indoor Chemical & Pollutant Source Control	Water Quality	Use	Adopt green housekeeping procedures that eliminate use of chemicals; for any liquid chemicals used in the building, ensure proper disposal in appropriately configured plumbing drains and pipes			low
Innovation and Design Process						
Persistent Bioaccumulative Toxins (PBTs)	Water Quality	Upstream	Disallow use of building materials responsible for the release of persistent bioaccumulative toxins through their life cycle (manufacture, use, post-use/disposal). Because of their persistence and bioaccumulative properties, PBTs are a concern beyond their point source and are found throughout the planet.	State of Washington Department of Ecology has adopted a PBT strategy prioritizing several pesticides and several related to building materials including dioxins and furans and mercury.	Evaluate material specifications to eliminate products that release PBTs through their life cycle	none to low